

CLAIMS

1. An inverter for converting direct current voltage to alternating current voltage comprising
- 5 - a first input arranged to be connected to a vessel's ordinary current supply system, where said current supply system comprises a generator connected to a battery, and
- an output arranged to be connected to an alternating
- 10 current motor, where, for at least a period of time, said alternating current motor requires a first torque  $M_1$  in order to rotate, characterized in that
- a regulating circuit is arranged to measure a
- 15 charging current from said generator to said battery and to measure the voltage level in said battery,
- said regulating circuit is, in addition, arranged to permit an output current from said vessel's ordinary current supply system to said inverter which is higher
- 20 than said charging current, in a first operating mode, and
- said regulating circuit is arranged to limit said output current while maintaining the torque for said motor, in a second operating mode.
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2. The inverter as claimed in claim 1, characterized in that
- said regulating circuit is arranged to assume said first operating mode if said battery voltage is over a
- 30 limit value for the battery voltage, and
- said regulating circuit is arranged to assume said second operating mode when said battery voltage is below said limit value for the battery voltage, in order thereby to prevent said battery voltage from
- 35 dropping further.
3. The inverter as claimed in claim 1, characterized in that

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- said inverter comprises a second input, on which second input a signal can be applied,

- said regulating circuit is arranged to assume said first operating mode when said signal assumes a first value, and

- said regulating circuit is arranged to assume said second operating mode when said signal assumes a second value.

4. The inverter as claimed in claim 3, characterized in that

- said regulating circuit is arranged to assume said first operating mode only if said battery voltage is above a limit value for the battery voltage.

5. The inverter as claimed in claim 3 or 4, characterized in that

- said signal can assume a number of values, with said signal value being proportional to a maximal output current level to which said regulating circuit limits said output current.

6. The inverter as claimed in any one of claims 1-5, characterized in that said limiting of the output current is carried out by reducing the voltage and the frequency applied to said alternating current motor in such a way that the ratio between said voltage and frequency is constant, while the current to said alternating current motor is kept constant, in order thereby to reduce the power supplied to said alternating current motor without reducing said torque.

7. The inverter as claimed in any one of claims 1, 2, 4 or 6, characterized in that said limit value for said battery voltage is set in such a way that the function of other electronics that are supplied with power from said battery is guaranteed.

8. The inverter as claimed in any one of claims 1 - 7, characterized in that

- said regulation circuit is arranged to measure said current output from said vessel's ordinary current supply system, and

- said regulating circuit is arranged to limit said current output from said vessel's ordinary current supply system to a limit value for an output current, if said current output exceeds said limit value for the output current.

9. The inverter as claimed in claim 8, characterized in that said regulating circuit measures said current output by measuring the magnetic field with a Hall element.

10. The inverter as claimed in any one of claims 1 - 9, characterized in that

- the battery voltage is measured at said first input to said inverter.

11. The inverter as claimed in any one of claims 1 - 10, characterized in that

- the battery voltage is measured at said battery.

12. The inverter as claimed in any one of claims 1 - 11, characterized in that

- said output current is measured by measuring the rotational speed of said generator.

13. The inverter as claimed in claim 12, characterized in that

- the rotational speed of said generator is measured by measuring the ripple on said battery voltage.

14. A method for supplying current to an apparatus in a vehicle than has an ordinary current supply system, said ordinary current supply system comprising a battery which is charged by a generator, said vehicle

comprising, in addition, an inverter that has an input connected to said ordinary current supply system and an output connected to said apparatus for supplying said apparatus with an alternating current,

5 characterized by the steps of:

- measuring a charging current from said generator to said battery,

- permitting an output current from said ordinary current supply system to said inverter during a first operating mode for supplying said apparatus with current,

and

- limiting said output current from said ordinary current supply system to said inverter during a second operating mode, while retaining the torque to said apparatus.

15. The method as claimed in claim 14, comprising the steps of

- 20 - measuring the battery voltage,

- assuming said first operating mode if said battery voltage is above a limit value for the battery voltage, and

- assuming said second operating mode when said battery voltage is below said limit value for the battery voltage, in order thereby to prevent said battery voltage from dropping still further.

16. The method as claimed in any one of claims 14 -

30 15, characterized in that said limiting of the output current is carried out by reducing the voltage and the frequency of said alternating current that is applied to said apparatus so that the ratio between said voltage and frequency is constant while the current to

35 said apparatus is kept constant, in order thereby to reduce the power applied to said apparatus without reducing said torque.